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TITLE: Control System

Hon. Commissioner of Patents and Trademarks,
Washington, D.C. 20231

SIR:

CERTIFIED TRANSLATION

I, Tomomi NISHIKAWA, am an official translator of the Japanese language into the English language and I hereby certify that the attached comprises an accurate translation into English of Japanese Application No. 2000-198943, filed on June 30, 2000.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United states Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

16th September 2005
Date

Tomomi Nishikawa
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[Patent Attorney]	
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[List of Documents Attached]

[Name of Document]	Specification	1
[Name of Document]	Drawings	1
[Name of Document]	Abstract	1

[Proof] Required

[Name of Document] SPECIFICATION

[Title of the Invention] CONTROL SYSTEM

[Claims]

[Claim 1]

A control system comprising a first control apparatus which comprises, at least, a display screen which can also be used as a touch panel, said first control apparatus operating a predetermined electronic apparatus; a second server for communicating with said first control apparatus, said second server being connected or linked to a plurality of electronic apparatuses; and a third server for establishing a connection with said second server through a network;

wherein said first control apparatus changes settings of GUI data, internal processing data, and/or display data, which are contained in said first control apparatus, based on GUI data, internal processing data, and/or display data, which are stored or designated by said second server.

[Claim 2]

A control system according to Claim 1, wherein said first control apparatus is a remote controller.

[Claim 3]

A control system according to Claim 1, wherein the network is the Internet.

[Claim 4]

A control system according to Claim 1, wherein the electronic apparatuses are home appliances and AV apparatuses.

[Claim 5]

A control system according to Claim 1, wherein the display screen of said first control apparatus is a liquid crystal display screen.

[Claim 6]

A control system according to Claim 1, wherein said second server receives information recorded by said third server through the network; and said second server transfers the received information to said first control apparatus using wired or wireless communications.

[Claim 7]

A control system according to Claim 1, wherein communication data communicated among said first control apparatus, said second server, and said third server is meta-data.

[Claim 8]

A control system according to Claim 1, wherein said second server includes control data for the electronic apparatuses; and said first control apparatus receives the control data for a specific electronic apparatus from said second server and uses the data as the internal processing data.

[Claim 9]

A control system according to Claim 8, wherein said second server downloads the control data from said third server.

[Claim 10]

A control system according to Claim 1, wherein said first control apparatus further comprises display means for combining the control data for the electronic apparatuses and displaying the combined data.

[Claim 11]

A control system according to Claim 1, wherein said first control apparatus downloads data received from said second server to the electronic apparatuses which are connected or linked to said second server.

[Claim 12]

A control system according to Claim 11, wherein the data includes data downloaded from said third server.

[Claim 13]

A control system according to Claim 12, wherein the data includes an electronic program guide.

[Claim 14]

A control system according to Claim 1, wherein said second server and the electronic apparatuses are connected by link connection with a digital interface which conforms to the IEEE 1394 specification standard.

[Claim 15]

A control system comprising a first control apparatus which comprises, at least, a display screen which can also be used as a touch panel, said first control apparatus operating a predetermined electronic apparatus; and a second server for communicating with said first control apparatus, said second server being connected or linked to a plurality of electronic apparatuses;

wherein said first control apparatus changes settings of GUI data, internal processing data, and/or display data, which are contained in said first control apparatus, based on GUI data, internal processing data, and/or display data, which are stored or designated by said second server.

[Claim 16]

A control system according to Claim 15, wherein said first control apparatus is a remote controller.

[Claim 17]

A control system according to Claim 15, wherein the electronic apparatuses are home appliances and AV apparatuses.

[Claim 18]

A control system according to Claim 15, wherein the display screen of said first control apparatus is a liquid crystal display screen.

[Claim 19]

A control system according to Claim 15, wherein said first control apparatus transfers the information contained therein to said second server using wired or wireless communications.

[Claim 20]

A control system according to Claim 15, wherein communication data communicated between said first control apparatus and said second server is meta-data.

[Claim 21]

A control system according to Claim 15, wherein said second server includes control data for the electronic apparatuses; and said first control apparatus receives the control data for a specific electronic apparatus from said second server and uses the data as the internal processing data.

[Claim 22]

A control system according to Claim 15, wherein said first control apparatus further comprises display means for combining the control data for the electronic apparatuses and displaying the combined data.

[Claim 23]

A control system according to Claim 15, wherein said first control apparatus downloads data received from said second server to the electronic apparatuses which are connected or linked to said second server.

[Claim 24]

A control system according to Claim 23, wherein the data includes an electronic program guide.

[Claim 25]

A control system according to Claim 15, wherein said second server and the electronic apparatuses are connected by link connection with a digital interface which conforms to the IEEE 1394 specification standard.

[Detailed Description of the Invention]

[0001]

[Technical Field of the Invention]

The present invention relates to control systems (remote controllers). More particularly, the present invention relates to a control system capable of operating a plurality of electronic apparatuses by obtaining data about the electronic apparatuses, namely, the household electrical appliances.

[0002]

[Description of the Related Art]

Conventionally, many household electrical apparatuses (electrical appliances for domestic use) and AV (Audio Visual) apparatuses, such as video cassette recorders (VCRs), televisions, air conditioners, and lighting apparatuses, are furnished with remote controls (remote controllers). These remote controls each have operation units and functions specific to each apparatus. However, there are also learning-type multifunctional remote controls in which the remote controls for a television and a VCR are integrated into a single remote control. These learning-type multifunctional remote controls have stored remote control signals for major manufacturers beforehand in memory. From among the stored remote control signals, a signal for an apparatus owned by a user is selected, and settings are performed.

[0003]

[Problems to be Solved by the Invention]

In the learning-type remote controls, there is a problem in that it is impossible to add additional operation buttons to, delete operation buttons from, and change operation buttons from among those already installed at the beginning. In remote controls for apparatuses such as televisions and VCRs which possess the common functions, only operations common to both, such as power on/off, play, record, fast-forward, rewind, and the like are available in the single remote control. It has so far been impossible to integrate remote controls for home appliances (such as remote controls for an air conditioner and a VCR) which have different functions (applications), into a single remote control.

[0004]

Accordingly, it is an object of the present invention to integrate the functions of remote controls for various household electrical apparatuses and AV apparatuses into a single remote control and to allow easy changing of these functions.

[0005]

[Means for Solving the Problems]

In order to solve the foregoing problems, a control system according to the present invention has the following configuration.

(1) A control system including a first control apparatus which includes, at least, a display screen which can also be used as a touch panel, the first control apparatus operating a predetermined electronic apparatus; a second server for communicating with the first control apparatus, the second server being connected or linked to a plurality of electronic apparatuses; and a third server for establishing a connection with the second server through a network;

wherein the first control apparatus changes settings of GUI data, internal processing data, and/or display data, which are contained in the first control apparatus, based on GUI data, internal processing data, and/or display data, which are stored or designated by the second server.

(2) A control system as set forth in (1), wherein the first control apparatus is a remote controller.

(3) A control system as set forth in (1), wherein the network is the Internet.

(4) A control system as set forth in (1), wherein the electronic apparatuses are home appliances and AV apparatuses.

(5) A control system as set forth in (1), wherein the display screen of the first control apparatus is a liquid crystal display screen.

(6) A control system as set forth in (1), wherein the second server receives information recorded by the third server through the network; and the second server transfers the received information to the first control apparatus using wired or wireless communications.

(7) A control system as set forth in (1), wherein communication data communicated among the first control apparatus, the second server, and the third server is meta-data.

(8) A control system as set forth in (1), wherein the second server includes control data for the electronic apparatuses; and the first control apparatus receives the control data for a specific electronic apparatus from the second server and uses the data as the internal processing data.

(9) A control system as set forth in (8), wherein the second server downloads the control data from the third

server.

(10) A control system as set forth in (1), wherein the first control apparatus further includes display means for combining the control data for the electronic apparatuses and displaying the combined data.

(11) A control system as set forth in (1), wherein the first control apparatus downloads data received from the second server to the electronic apparatuses which are connected or linked to the second server.

(12) A control system as set forth in (11), wherein the data includes data downloaded from the third server.

(13) A control system as set forth in (12), wherein the data includes an electronic program guide.

(14) A control system as set forth in (1), wherein the second server and the electronic apparatuses are connected by link connection with a digital interface which conforms to the IEEE 1394 specification standard.

[0006]

(15) A control system including a first control apparatus which includes, at least, a display screen which can also be used as a touch panel, the first control apparatus operating a predetermined electronic apparatus; and a second server for communicating with the first control apparatus, the second server being connected or linked to a plurality of electronic apparatuses; wherein the first control apparatus

changes settings of GUI data, internal processing data, and/or display data, which are contained in the first control apparatus, based on GUI data, internal processing data, and/or display data, which are stored or designated by the second server.

(16) A control system as set forth in (15), wherein the first control apparatus is a remote controller.

(17) A control system as set forth in (15), wherein the electronic apparatuses are home appliances and AV apparatuses.

(18) A control system as set forth in (15), wherein the display screen of the first control apparatus is a liquid crystal display screen.

(19) A control system as set forth in (15), wherein the first control apparatus transfers the information contained therein to the second server using wired or wireless communications.

(20) A control system as set forth in (15), wherein communication data communicated between the first control apparatus and the second server is meta-data.

(21) A control system as set forth in (15), wherein the second server includes control data for the electronic apparatuses; and the first control apparatus receives the control data for a specific electronic apparatus from the second server and uses the data as the internal processing

data.

(22) A control system as set forth in (15), wherein the first control apparatus further includes display means for combining the control data for the electronic apparatuses and displaying the combined data.

(23) A control system as set forth in (15), wherein the first control apparatus downloads data received from the second server to the electronic apparatuses which are connected or linked to the second server.

(24) A control system as set forth in (23), wherein the data includes an electronic program guide.

(25) A control system as set forth in (15), wherein the second server and the electronic apparatuses are connected by link connection with a digital interface which conforms to the IEEE 1394 specification standard.

[0007]

By downloading various information and data from a second server connected or linked to a plurality of electronic apparatuses to a first control apparatus, namely, a remote control, it becomes possible to operate the electronic apparatuses and change data such as upgrading the version using a single remote control. Functions of remote controls for the electronic apparatuses are integrated into the single remote control, and the functions can be changed easily.

[0008]

[Description of the Embodiments]

A control apparatus according to an embodiment of the present invention is described with reference to the drawings.

[0009]

A home network shown in Fig. 1 includes a data server 100, i.e., a third server, which can establish a connection with a home server 110, i.e., a second server, through a network. The home network also includes the home server 110, i.e., the second server, which is capable of communicating with a first control apparatus, namely, a remote control 120. The home server 110 is connected or linked to a plurality of electronic apparatuses. Also, the home network includes the remote control 120 which includes, at least, a display screen which can also be used as a touch panel, and the remote control 120 is linked to the electronic apparatuses. The home network further includes home appliances 130, which are the electronic apparatuses. The data server 100 is connected to the home server 110 through a network 140.

[0010]

The data server 100, i.e., the third server, may be located at one place or at several places throughout the network 140. The data server 100 stores various control data for the home appliances 130, GUI (Graphical User

Interface) data, internal processing data, display data, EPG (electronic program guide) data, and the like for the remote control 120 which controls the home appliances 130. The data are stored as XML (eXtensible Markup Language) meta-data or the like, and hence the data can be handled as the single type of data, regardless of the type of apparatus.

[0011]

The home server 110, i.e., the second server, includes connecting means for establishing a connection with the data server 100, storing means for downloading and storing the data stored in the data server 100, and communication means for establishing a connection or link with the home appliances 130 and performing wired or wireless data communication with the home appliances 130. Data downloading can be performed automatically or in response to an instruction given by the remote control 120 or a notification given by the data server 100. Connection between the home server 110 and the electronic apparatuses, namely, the home appliances 130, is established by establishing a link (i.LINK in this embodiment) with a digital interface which conforms to the IEEE 1394 specification standard.

[0012]

As shown in Fig. 2, the remote control 120, i.e., the first control apparatus, includes data obtaining means (not shown) for establishing a wired connection or a wireless link with the home server 110 and for obtaining various control data and GUI data, internal processing data, display data, EPG (electronic program guide) data, and the like for the remote control which controls the home appliances 130. The remote control 120 also includes a display screen 122 for displaying the obtained data using an integrated screen and operation keys 124 which are used to operate the home server 110 and the home appliances 130.

[0013]

The display screen 122 is integrated in such a manner that it is possible to view a single screen which combines operation panels 123 for the electronic apparatuses or the home appliances 130 such as a VCR, an AVHDD, a PC, an Audio, and the like, as shown in Fig. 3. The operation panel 123 for the home appliance currently in use (VCR in Fig. 3) is displayed in the foreground.

[0014]

The operation panel 123 is a touch panel. The operation panel 123 includes index sections 123a for displaying the names of the home appliances 130, operation buttons 123b for operating the home appliances, and an information display section 123c for displaying information contained in the home appliances 130, such as the title of a song on a CD (compact disc) or the title of a program recorded in the AV-HDD, and EPG data. When operating a desired home appliance, the corresponding index section 123a is touched, and the corresponding operation panel 123 for the desired home appliance is displayed in the foreground.

[0015]

In Fig. 4, a block diagram of the internal structure of the remote control 120 is shown. An application unit 401 includes application for managing a program which runs in the operation panels 123 for the home appliances 130, and a Windows system for controlling the operation panels 123. A style sheet manager 402 controls style sheets concerning GUI data. A content control unit 403 includes a content manager which displays and controls content displayed by the application unit 401, a content driver, and a meta-data parser. A style sheet driver 404 displays elements other than content, namely, the operation buttons and text data area (the information display section 123c), and the style sheet driver 404 integrates actions in response to events. A key control unit 405 includes an event handler for performing key control of elements forming the screen and an action manager. A screen arrangement control unit 406 includes an AWT manager and a GUI driver and controls the screen arrangement. A token parser 407 classifies transmitted data as either content or elements (GUI parts) and performs settings. A communication unit 408 functions as an interface between a communication device 409 and other sections. The communication device 409 includes TCP, IP, and RAW, which rearranges transmitted data (packets) in order of transmission and perform error correction and packet transfer (route control). An IF 410 includes physical interfaces, namely, Wireless, Wire-carried, and IrDA interfaces, with wireless, wired, and infrared communication means, respectively.

[0016]

As shown in Fig. 1, the home appliances 130, i.e., the electronic apparatuses, include AV equipment such as an HDD recorder, VCR deck, PC, and audio equipment. These home appliances 130 are connected to the home server 110 by a bus connection, daisy chain, or the like. In response to an instruction from the remote control 120, the home appliances 130 perform predetermined processing and download predetermined data from the home server 110. The type of home appliance is not limited to these apparatuses but can be any home appliance so long as it can be operated by remote control.

[0017]

The operation of the home network system which includes the data server 100, the home server 110, the remote control 120, and the home appliances 130 is described with reference to Figs. 1 to 4.

[0018]

A case is described in which a remote control function of each of the home appliances 130 is installed or updated in the remote control 120 is described. From the data server 100, the home server 110 downloads and stores GUI data, internal processing data, and display data, which concern the display screen 122 of the remote control 120, and control data for the remote control 120 automatically or in response to an instruction from the remote control 120 or a notification from the data server.

[0019]

The remote control 120 gains access to the home server 100 using wired or wireless communications, obtains the stored GUI data, internal processing data, display data, control data, and the like which are downloaded from the data server 100, and then updates the remote control functions. For example, when an additional button is added to the operation buttons 123b (play, erase, programming, and next page) shown in Fig. 3 or the operation buttons 123b are deleted or changed, or when a new home appliance is installed, the new button or the new home appliance is appended to the overall operation panels 123 shown in Fig. 3, and a new layout of the operation panels is arranged and displayed. The layout can be changed in accordance with user's preferences.

[0020]

A case is described in which functions of each of the home appliances 130 are updated by instructions from the remote control 120. In this case, the home server 110 downloads new function data concerning the home appliance 130 from the data server 130 and stores the data automatically or in response to an instruction from the remote control 120 or a notification from the data server. When the remote control 120 gains access to the home server 110, the remote control 120 is notified that the new function data is stored, or the remote control 120 searches the data. Accordingly, the remote control 120 instructs the corresponding home appliance 130 to download the new function data from the home server 110 and to update the function.

[0021]

The home appliance 130 receives the instruction from the remote control 120 and downloads the predetermined new function data from the home server 110 to which the home appliance 130 is connected by a bus connection or daisy chain. For example, the home appliance 130 overwrites the written contents of memory in the home appliance 130 and updates the function. Alternatively, the remote control 120 can instruct the home server 110 to transfer the stored new function data to the home appliance 130.

[0022]

When the new function data is added and the function is updated by the home appliance 130, a new operation button or the like is also added to the remote control 120. In such a case, as described above, the remote control 120 obtains predetermined data from the home server 110 and updates the function.

[0023]

Since the home appliance 130 is connected to the home server 110 by a bus connection or daisy chain, for example, the home appliance 130 can transfer information contained in the home appliance 130, such as the title of a song on a CD (compact disc) or the title of a program recorded in the AV-HDD, to the home server 110, and the home server 110 may in turn transfer the information to the remote control 120 to display the information on the display screen 122.

[0024]

A case in which programming is performed to record a particular program based on the EPG data is described. As described above, the home server 110 downloads the EPG data from the data server 100 and stores the data automatically or in response to an instruction from the remote control or a notification from the data server. The remote control 120 gains access to the home server 110 and obtains the EPG data.

[0025]

The EPG data obtained by the remote control 120 is displayed on the display screen 122. After a user confirms the content of the program, the remote control 120 directly transfers the programming information to the home appliance 130 (VCR) in order to record the desired program. Alternatively, the remote control 120 may instruct the home server 110 to perform programming to record the desired program, and the home server 110 in turn instructs the home appliance 130 to perform the programming to record the program.

[0026]

[Advantages]

As has been described heretofore, by integrating functions of remote controls for a plurality of home appliances into a single remote control, it is no longer necessary to possess a plurality of remote controls. When a new home appliance is purchased, it is only necessary to add remote control data concerning the purchased home appliance. When adding, changing, or deleting the functions of a remote control for each home appliance, it is only necessary to download the most recent data from a home server and to update the corresponding functions. The layout of a display screen of the remote control can also be changed, and hence users can rearrange the layout in accordance with their preferences.

[Brief Description of the Drawings]

[Fig. 1]

Fig. 1 is a schematic diagram of a home network system in which a control apparatus according to the present invention is used to control home appliances.

[Fig. 2]

Fig. 2 is an external view of the control apparatus according to the present invention.

[Fig. 3]

Fig. 3 illustrates the arrangement of a display screen of the control apparatus according to the present invention.

[Fig. 4]

Fig. 4 is a block diagram of the internal structure of the control apparatus according to the present invention.

[Reference Numerals]

100: data server, 110: home server, 120: remote control, 130: home appliances, 122: display screen, 123a: index sections, 123b: operation buttons, 123c: information display section, 124: operation keys, 401: application unit, 402: style sheet manager, 403: control content unit, 404: style sheet driver, 405: key control unit, 406: screen arrangement control unit, 407: token parser, 408: communication unit, 409: communication device, 410: IF

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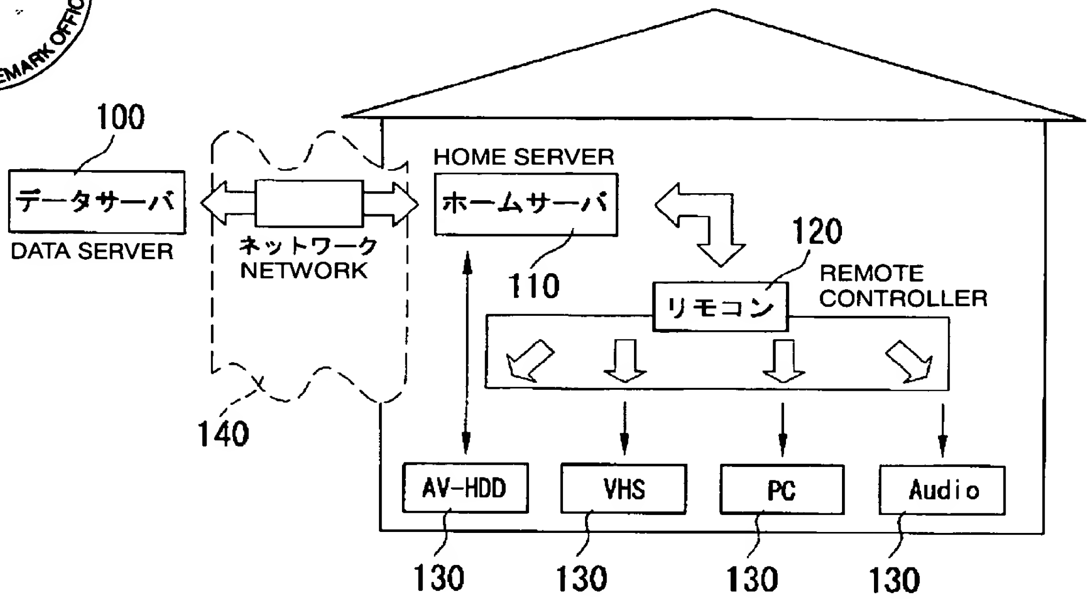
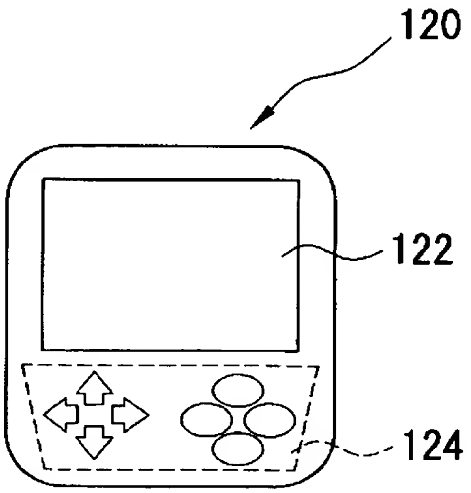
【書類名】　図面 [Name of Document] DRAWINGS

【図１】 [FIG. 1]


100
データサーバ
DATA SERVER
ネットワーク
NETWORK
140
HOME SERVER
ホームサーバ
110
120
リモコン
REMOTE CONTROLLER
AV-HDD
VHS
PC
Audio
130
130
130
130

【図２】 [FIG. 2]



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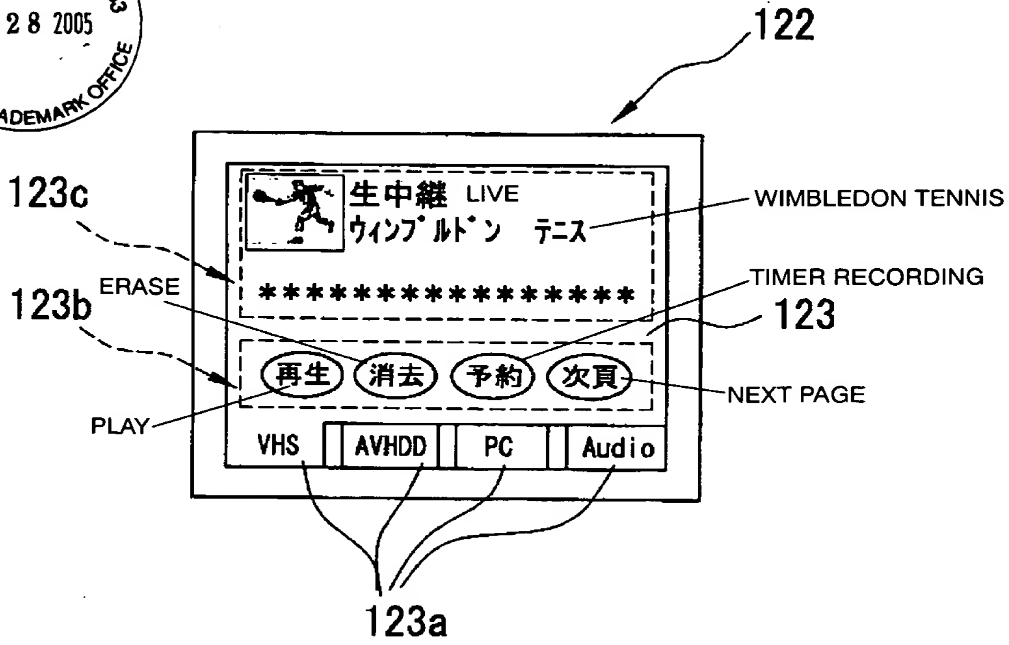
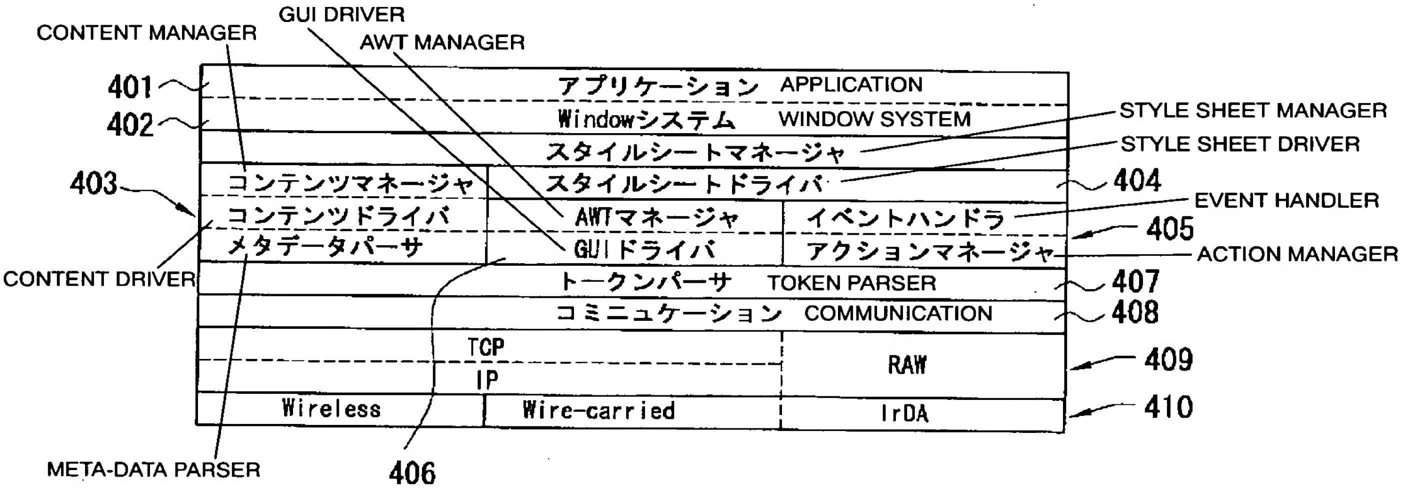
【図３】 [FIG. 3]


122
123c
123b
ERASE
生中継 LIVE
ウィンブルドン　テニス
WIMBLEDON TENNIS
****
TIMER RECORDING
123
再生
消去
予約
次頁
NEXT PAGE
PLAY
VHS
AVHDD
PC
Audio
123a

【図４】 [FIG. 4]


CONTENT MANAGER
GUI DRIVER
AWT MANAGER
401
402
403
アプリケーション APPLICATION
Windowシステム WINDOW SYSTEM
スタイルシートマネージャ
STYLE SHEET MANAGER
スタイルシートドライバ
STYLE SHEET DRIVER
404
コンテンツマネージャ
コンテンツドライバ
メタデータパーサ
AWTマネージャ
GUIドライバ
イベントハンドラ
EVENT HANDLER
405
アクションマネージャ
ACTION MANAGER
CONTENT DRIVER
トークンパーサ TOKEN PARSER
407
コミニュケーション COMMUNICATION
408
TCP
IP
RAW
409
Wireless
Wire-carried
IrDA
410
META-DATA PARSER
406

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[Name of Document] ABSTRACT

[Abstract]

[Object] To provide a remote control capable of integrating functions of remote controls for a plurality of electronic apparatuses into a single remote control and easily changing the functions.

[Solving Means] A first control apparatus includes, at least, a display screen which can also be used as a touch panel. The first control apparatus operates a predetermined electronic apparatus. A second server communicates with the first control apparatus and is connected or linked to a plurality of electronic apparatuses. A third server establishes a connection with the second server through a network. Based on GUI data, internal processing data, and/or display data, which are stored or designated by the second server, the first control apparatus changes settings of GUI data, internal processing data, and/or display data, which are contained in the first control apparatus.

[Selected Figure] Fig. 1